



**State of Louisiana
Department of Natural Resources
Coastal Engineering Division**

**2005/2006 Annual Inspection
Report**

For

**PECAN ISLAND TERRACING
PROJECT
(ME-14)**

State Project Number ME-14
Priority Project List 7

October 20, 2005
Vermilion Parish

Prepared by:

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I. Introduction

The Pecan Island Terracing (ME-14) project is located five miles north of the Gulf of Mexico just south of Pecan Island and Hwy 82 in the Lakes Sub-basin of the Mermentau Basin, Vermilion Parish, Louisiana. The total project area comprises 3,753 acres (1,519 ha) of brackish marsh and open water. Area 1 is primarily open water and was formerly pasture land of approximately 1,938 acres (784 ha). Area 2 consists of 1,715 acres (694 ha) of brackish marsh and open water.

The project features include construction of 197,000 linear feet (60,046 m) of terraces in 500 ft (152.4 m) sections with a 50 ft (15.24 m) break between each terrace, creating approximately 344 terraces. Terraces run east to west in a staggered gap formation. The terraces were constructed by depositing borrow material with a 40 ft (12.19 m) berm for a terrace with 4:1 side slopes and a top width of 10 ft (3.04 m). Initial constructed elevation was approximately 3.75 ft (1.14 m) NAVD 88 which in 5 years should have a final settled elevation approximately 1 ft above marsh elevation. The dredged material was deposited such that the terrace's side slopes were 4:1 to conform to the natural angle of repose for the bottom soil. Breaks were constructed to permit water to move in and out of the interior, which may facilitate the settling of suspended soil particles. *Spartina alterniflora* (smooth cordgrass) plugs were planted every five linear feet on both sides of terrace.

The Pecan Island Terracing Project was authorized by Section 303(a) of Title III Public Law 101-646, the Coastal Wetlands Planning Protection and Restoration Act (CWPPRA) enacted on November 29, 1990 as amended and approved on the seventh Priority Project List. The Pecan Island Terracing Project has a twenty –year (20 year) economic life, which began in September 2003.

II. Inspection Purpose and Procedures

The purpose of the annual inspection of the Pecan Island Terracing Project (ME-14) is to evaluate the constructed project features, identify any deficiencies and prepare a report detailing the condition of project features and recommended corrective actions needed. Should it be determined that corrective actions are needed, LDNR shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, and construction contingencies, and an assessment of the urgency of such repairs (O&M Plan, 2003). The annual inspection report also contains a summary of maintenance projects, if any, which were completed since completion of constructed project features and an estimated projected budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C.

In 2003, the CWPPRA Task Force determined, due to the fact that LDNR was responsible for the operation and maintenance phase of the vast majority of CWPPRA projects, that LDNR would be the responsible party for all Post Storm/Hurricane Assessments. After Hurricanes Katrina and Rita, every project appeared to have been impacted by the storms; therefore,

LDNR determined that all projects should be assessed for damages (Broussard, 2006). With concurrence from the federal sponsor, LDNR has decided to use the information obtained during this post hurricane assessment in this Annual Maintenance Inspection.

An inspection of the Pecan Island Terracing Project (ME-14) was held on October 20, 2005 under clear skies and mild temperatures. In attendance were Mel Guidry, Stan Aucoin, Beau Tate, and Ken Bahlinger from LDNR. Representatives from NMFS were invited but could not attend. All parties met at the CED Lafayette Field Office and proceeded to the boat launch adjacent to the Pecan Island Terracing Project (ME-14). The group traveled throughout the project area via CED boat inspecting the terraces.

The field inspection included a complete visual inspection of all earthen terraces. Staff gauge readings were used to determine approximate elevations of water and earthen terraces. Photographs were taken of various earthen terraces (see Appendix B) and Field Inspection notes were completed in the field to record measurements and any notable deficiencies (see Appendix D).

III. Project Description and History

The Pecan Island Terracing Project area was originally marshland that was transformed into dry pasture land in the mid 1950's by constructing continuous dikes and pumping out the water. Deterioration and loss of the perimeter levees in recent years has converted the entire area into a shallow, open water lake with a few small marsh islands. The project will convert areas of open water back to vegetated marsh through the construction of earthen terraces, which were completed in August, 2003. The terrace construction will include breaks between the terraces to facilitate sediment settling. Submerged aquatic vegetation growth will be promoted in the terrace area due to reduced turbidity and wave action. Vegetative plantings were completed in September, 2003.

The principal project features include:

1. 196,800 Linear Feet of Earthen Terraces
2. Smooth Cordgrass Plantings on Earthen Terraces

The following goals will contribute to the evaluation of the above objective:

1. Increase land to water ratios by constructing approximately 100 acres (41.3 ha) of earthen terraces in Area 1.
2. Increase land to water ratios by creating over 300 acres (121.4 ha) of land within Areas 1 and 2 over 20 years after construction.

3. Increase percent cover of SAV in remaining open water areas to 50% in Area 1 and 15% in Area 2.
4. Establish emergent vegetated marsh on planted terraces.

IV. Summary of Past Operation and Maintenance Projects

General Maintenance: No maintenance has been necessary on this project.

2005 Structure Operations:

There are no active operations associated with this project.

V. Inspection Results

Terraces

The earthen terraces are in very good condition and did not sustain damages from the storm. Anticipated erosion on the southern sacrificial terraces has occurred. However, those sacrificial terraces are still providing protection for the interior earthen terraces. No maintenance required at this time. (Photos: Appendix B, Photo 1)

Vegetative Plantings

The vegetative plantings on the slopes of the earthen terraces have colonized significantly and are experiencing stress due to salt water inundation and hurricane force winds. On a separate field trip dated October 11, 2005, Monitoring Personnel identified the need for complete replacement of two (2) continuous recorders and two (2) staff gages within the project area. (Photos: Appendix B, Photo 2)

VI. Conclusions and Recommendations

Overall, the Pecan Island Terracing Project (ME-14) is functioning as designed and in good condition appears to not have sustained any discernable damage from Hurricane RITA. The layout and typical section of the earthen terraces has been effective in reducing wind fetch. Future structural assessment surveys will provide information on actual crown height settlement versus projected crown height settlement. No maintenance is needed at this time.

Appendix A
Project Features Map



Pecan Island Terracing (ME-14)

-  Terrace *
-  Project Boundary
- * denotes proposed feature

USGS
science for a changing world



Map Produced By:
U.S. Department of the Interior
U.S. Geological Survey
National Wetlands Research Center
Coastal Restoration Field Station

Background Imagery:
1998 Digital Orthophoto Quarter Quadrangle
Map Date: November 27, 2002
Map ID: USGS-NWRC 2003-11-004
Data accurate as of: November 27, 2002

Appendix B

Photographs



Photo 1, Typical earthen terrace.



Photo 2, Typical eroded terrace.

Appendix C

Three Year Budget Projection

PECAN ISLAND TERRACING/ ME-14 / PPL 7
Three-Year Operations & Maintenance Budgets 07/01/2005 - 06/30/08

| | | | |
|------------------------|--------------------------|------------------------|--------------------|
| <u>Project Manager</u> | <u>O & M Manager</u> | <u>Federal Sponsor</u> | <u>Prepared By</u> |
| Pat Landry | Mel Guidry | NMFS | Mel Guidry |

| | 2005/2006 | 2006/2007 | 2007/2008 |
|-----------------------------------|-------------|-------------|-------------|
| Maintenance Inspection | \$ 4,955.00 | \$ 5,250.00 | \$ 5,407.00 |
| Structure Operation | | | |
| Administration | | \$ - | \$ - |
| Maintenance/Rehabilitation | | | |

05/06 Description:

| | |
|-------------------------------|------|
| E&D | |
| Construction | |
| Construction Oversight | |
| Sub Total - Maint. And Rehab. | \$ - |

06/07 Description: Structural Assessment

| | |
|-------------------------------|--------------|
| E&D | \$ 25,000.00 |
| Construction | \$ - |
| Construction Oversight | \$ - |
| Sub Total - Maint. And Rehab. | \$ 25,000.00 |

07/08 Description:

| | |
|-------------------------------|------|
| E&D | \$ - |
| Construction | \$ - |
| Construction Oversight | \$ - |
| Sub Total - Maint. And Rehab. | \$ - |

| | 2005/2006 | 2006/2007 | 2007/2008 |
|------------------------------|--------------------|---------------------|--------------------|
| Total O&M Budgets | \$ 4,955.00 | \$ 30,250.00 | \$ 5,407.00 |

| | |
|---|----------------------|
| O & M Budget (3 yr Total) | \$ 40,612.00 |
| Existing O & M Budget | \$ 193,475.00 |
| Remaining O & M Budget (Projected) | \$ 152,863.00 |

OPERATION AND MAINTENANCE BUDGET WORKSHEET
PECAN ISLAND TERRACING / PROJECT NO. ME-14 / PPL NO. 7

| DESCRIPTION | UNIT | EST. QTY. | UNIT PRICE | ESTIMATED TOTAL |
|-------------------------------|------|-----------|------------|-------------------|
| O&M Inspection and Report | EACH | 1 | \$5,250.00 | \$5,250.00 |
| General Structure Maintenance | LUMP | 1 | \$0.00 | \$0.00 |
| Engineering and Design | LUMP | 1 | \$0.00 | \$0.00 |
| Operations Contract | LUMP | 1 | \$0.00 | \$0.00 |
| Construction Oversight | LUMP | 1 | \$0.00 | \$0.00 |

ADMINISTRATION

| | | | | |
|------------------------------------|------|---|--------|---------------|
| LDNR / CRD Admin. | LUMP | 1 | \$0.00 | \$0.00 |
| FEDERAL SPONSOR Admin. | LUMP | 1 | \$0.00 | \$0.00 |
| SURVEY Admin. | LUMP | 0 | \$0.00 | \$0.00 |
| OTHER | | | | \$0.00 |
| TOTAL ADMINISTRATION COSTS: | | | | \$0.00 |

MAINTENANCE / CONSTRUCTION

SURVEY

| | | | | | |
|------------------------|------------------------------|------|---|-------------|-------------|
| SURVEY DESCRIPTION: | | | | | |
| | Secondary Monument | EACH | 0 | \$0.00 | \$0.00 |
| | Staff Gauge / Recorders | EACH | 0 | \$0.00 | \$0.00 |
| | Marsh Elevation / Topography | LUMP | 0 | \$0.00 | \$0.00 |
| | TBM Installation | EACH | 0 | \$0.00 | \$0.00 |
| | Structural Assessment/Report | LUMP | 1 | \$25,000.00 | \$25,000.00 |
| | TOTAL SURVEY COSTS: | | | | \$25,000.00 |

GEOTECHNICAL

| | | | | | |
|-------------------------|---------------------------|------|---|--------|--------|
| GEOTECH DESCRIPTION: | | | | | |
| | Borings | EACH | 0 | \$0.00 | \$0.00 |
| | OTHER | | | | \$0.00 |
| | TOTAL GEOTECHNICAL COSTS: | | | | \$0.00 |

CONSTRUCTION

| | | | | | | |
|------------------------------|-----------------------------------|--------|----------|--------|------------|--------|
| CONSTRUCTION DESCRIPTION: | | | | | | |
| | Rip Rap | LIN FT | TON / FT | TONS | UNIT PRICE | |
| | | 0 | 0.0 | 0 | \$0.00 | \$0.00 |
| | | 0 | 0.0 | 0 | \$0.00 | \$0.00 |
| | | 0 | 0.0 | 0 | \$0.00 | \$0.00 |
| | Filter Cloth / Geogrid Fabric | | SQ YD | 0 | \$0.00 | \$0.00 |
| | Navigation Aid | | EACH | 0 | \$0.00 | \$0.00 |
| | Signage | | EACH | 0 | \$0.00 | \$0.00 |
| | General Excavation / Fill | | CU YD | 0 | \$0.00 | \$0.00 |
| | Dredging | | CU YD | 0 | \$0.00 | \$0.00 |
| | Sheet Piles (Lin Ft or Sq Yds) | | | 0 | \$0.00 | \$0.00 |
| | Timber Piles (each or lump sum) | | | 0 | \$0.00 | \$0.00 |
| | Timber Members (each or lump sum) | | | 0 | \$0.00 | \$0.00 |
| | Hardware | | LUMP | 0 | \$0.00 | \$0.00 |
| | Materials | | LUMP | 0 | \$0.00 | \$0.00 |
| | Mob / Demob | | LUMP | 1 | \$0.00 | \$0.00 |
| | Contingency | | LUMP | 1 | \$0.00 | \$0.00 |
| | General Structure Maintenance | | LUMP | 1 | \$0.00 | \$0.00 |
| | OTHER | | | | \$0.00 | \$0.00 |
| | OTHER | | | | \$0.00 | \$0.00 |
| OTHER | | | | \$0.00 | \$0.00 | |
| TOTAL CONSTRUCTION COSTS: | | | | | \$0.00 | |

TOTAL OPERATIONS AND MAINTENANCE BUDGET:

\$30,250.00

Appendix D

Field Inspection Form

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name:Pecan Island Terracing ME-14

Date of Inspection: October 20, 2005 Time:

Structure No.

Inspector(s):Mel Guidry, Stan Aucoin, Beau Tate

Ken Bahlinger, LDNR

Structure Description: Earthen Terraces

Water Level Inside:+2.3 Outside: _____

Type of Inspection: Annual

Weather Conditions:Clear and Mild

| Item | Condition | Physical Damage | Corrosion | Photo # | Observations and Remarks |
|-----------------------|-----------|-----------------|-----------|---------|--------------------------------|
| Steel Bulkhead / Caps | N/A | | | | |
| Steel Grating | N/A | | | | |
| Stop Logs | N/A | | | | |
| Hardware | N/A | | | | |
| Timber Piles | N/A | | | | |
| Timber Wales | N/A | | | | |
| Galv. Pile Caps | N/A | | | | |
| Cables | N/A | | | | |
| Signage /Supports | N/A | | | | |
| Rip Rap (fill) | N/A | | | | |
| Earthen Terraces | Good | | | 1 & 2 | Terraces are in good condition |

What are the conditions of the existing levees?
 Are there any noticeable breaches?
 Settlement of rock plugs and rock weirs?
 Position of stoplogs at the time of the inspection?
 Are there any signs of vandalism?

Appendix E

Locations to be Monitored